WHAT IS CLAIMED IS:

1. A device for positioning at least one cell in at least one addressable position, the device comprising a substrate formed with at least one addressable pore and at least one channel embedded in said substrate and being in fluid communication with said at least one pore, said at least one pore and said at least one channel being designed and constructed such that an under-pressure formed in said at least one channel results in vacuum adherence of the at least one cell onto said at least one pore, such that a single cell is vacuum adhered onto a single pore.

2. The device of claim 1, comprising a plurality of addressable pores and a plurality of channels and being suitable for positioning a plurality of cells in a plurality of addressable positions.

3. The device of claim 1, wherein said substrate is coated with a coat or having a chemically modified surface, so as to enhance affinity adherence of cells thereto and growth of cells thereon.

4. The device of claim 3, wherein said coat or chemically modified surface is patterned.

5. The device of claim 4, wherein said coat or chemically modified surface is discontinuous.

6. The device of claim 5, wherein said coat or chemically modified surface is restricted to areas on said substrate surrounding said at least one pore.

7. The device of claim 1, designed and constructed locatable on an organ.

8. The device of claim 1, designed and constructed locatable on a brain.

9. The device of claim 1, designed and constructed implantable in an animal.

10. The device of claim 7, wherein said substrate is flexible.

11. The device of claim 1, wherein said substrate is a non-conductive substrate and is further formed with at least one electrode structure positioned in said at least one pore.

12. The device of claim 2, wherein said substrate is a non-conductive substrate and is further formed with a plurality of electrode structures, each being positioned in one of said plurality of addressable pores.

13. The device of claim 11, wherein said substrate is coated with a coat or having a chemically modified surface, so as to enhance affinity adherence of cells thereto and growth of cells thereon.

14. The device of claim 13, wherein said coat or chemically modified surface is patterned.

15. The device of claim 14, wherein said coat or chemically modified surface is discontinuous.

16. The device of claim 15, wherein said coat or chemically modified surface is restricted to areas on said substrate surrounding said at least one pore.

17. The device of claim 11, wherein said electrode structure is emerging from a base of said at least one pore and protrudes from a surface of said substrate.

18. The device of claim 12, wherein each of said plurality of electrode structures is emerging from a base of one of said plurality of addressable pores and is flush with a surface of said substrate.

19. The device of claim 12, wherein each of said electrode structures is designed and constructed to penetrate into a cell adhered thereto.

20. The device of claim 12, wherein each of said electrode structures is designed and constructed to externally engage a cell adhered thereto.

21. The device of claim 12, wherein each of said electrode structures is substantially perpendicular to said substrate.

22. The device of claim 11, designed and constructed such that when a cell adheres to said electrode structure, leakage of intracellular components of said cell is prevented.

23. The device of claim 11, wherein said electrode structure is a nanotube characterized by an inner diameter of 5 nm to 20 nm, an outer diameter of 50 nm to 200 nm and a height of 100 nm to 5000 nm.

24. The device of claim 12, wherein an average separation between two electrode structures of said plurality of electrode structures is from 50 nm to 300 nm.

25. The device of claim 11, wherein said electrode structure is characterized by an outer diameter of 10 micrometers to 30 micrometers.

26. The device of claim 12, wherein an average separation between two electrode structures of said plurality of electrode structures is from 50 micrometers to 300 micrometers.

27. The device of claim 11, wherein said at least one electrode structure has hydrophobic properties.

28. The device of claim 1, wherein said at least one channel is characterized by an inner diameter of 10 micrometers to 50 micrometers.

29. The device of claim 1, wherein said at least one channel and said at least one pore are designed and constructed so as to allow administration therethrough of at least one substance to the at least one cell.

30. The device of claim 2, wherein said plurality of channels and said plurality of addressable pores are designed and constructed so as to allow administration therethrough of different substances to different cells of said plurality of cells.

31. The device of claim 11, wherein said substrate is further formed with at least one conductive element embedded therein and electrically coupled to said at least one electrode structure.

32. The device of claim 12, wherein said substrate is further formed with a plurality of conductive elements embedded therein and electrically coupled to said plurality of electrode structures.

33. The device of claim 32, wherein said plurality of conductive elements and plurality of channels are devoid of electrical coupling thereamongst.

34. The device of claim 33, wherein said plurality of conductive elements and said plurality of channels are formed at different layers within said non-conductive substrate.

35. The device of claim 32, further comprising a coded interface electrically coupled with said plurality of conductive elements and being connectable to a system of amplifiers.

36. The device of claim 32, further comprising a system of amplifiers integrally formed on or in said substrate and being electrically coupled with said plurality of conductive elements.

37. The device of claim 35, wherein said coded interface comprises a plurality of transmission lines, each transmission line being electrically coupled to one of said plurality of conductive elements.

38. The device of claim 11, wherein said at least one electrode structure is characterized by voltage sensitivity ranging from 1 microvolt to 1 volt.

39. The device of claim 38, wherein said voltage sensitivity is selected so as to allow sensing intracellular potentials.

40. The device of claim 38, wherein said voltage sensitivity is selected so as to allow sensing extracellular potentials.

41. The device of claim 38, wherein said voltage sensitivity is selected so as to allow transmitting stimuli to the at least one cell.

42. The device of claim 32, wherein each of said plurality of conductive elements is made of Gold.

43. The device of claim 2, further comprising a pump being in fluid communication with said plurality of channels, said pump and said plurality of channels being designed and constructed so as to provide an equally distributed pressure drop over said plurality of addressable pores.

44. The device of claim 1, further comprising a fluid-interface being coupled to a fluid source, for continuously exchanging fluids between said fluid source and said at least one channel and said at least one pore.

45. The device of claim 3, wherein said coat or chemically modified surface comprises a substance selected from the group consisting of a protein, a peptide and a carbohydrate.

46. The device of claim 3, wherein said coat or chemically modified surface comprises, Poly-D-Lysine, Poly-D-Arginine, a mixed polymer of D-Lysine and D-arginine and Glc-Nac.

47. The device of claim 13, wherein said coat or chemically modified surface comprises a substance selected from the group consisting of a protein, a peptide and a carbohydrate.

48. The device of claim 13, wherein said coat or chemically modified surface comprises, Poly-D-Lysine, Poly-D-Arginine, a mixed polymer of D-Lysine and D-arginine and Glc-Nac.

49. A system for measuring electrical activity of a plurality of cells, the system comprising:

(a) a non-conductive substrate formed with a plurality of addressable pores and a plurality of channels embedded in said substrate and being in fluid communication with said plurality of addressable pores;

(b) a plurality of multi-electrode-arrays, each one of said plurality of multi-electrode-arrays includes a plurality of electrode structures formed on a first side of said non-conductive substrate and positioned in one of said pores, and a plurality of conductive elements formed on a second side of said non-conductive substrate, wherein each one of said conductive elements is electrically coupled to one of said electrode structures; and

(c) a fluid source being in fluid communication with said plurality of channels;

said pores, said channels, said electrode structures and said fluid source are designed and constructed so that said electrode structures sense electrical signals from the plurality of cells while said fluid source continuously exchanges fluids with said channels and pores.

50. The system of claim 49, wherein said plurality of multi-electrode-arrays are arranged so as to reduce ground loops.

51. The system of claim 49, wherein said plurality of multi-electrode-arrays are arranged so as to maximize signal-to-noise ratio.

52. The system of claim 49, wherein said plurality of multi-electrode-arrays are arranged in a matrix form.

53. The system of claim 49, wherein said plurality of multi-electrode-arrays are arranged in a square matrix form.

54. The system of claim 49, wherein said non-conductive substrate is coated with a coat or having a chemically modified surface, so as to enhance affinity adherence of cells thereto and growth of cells thereon.

55. The system of claim 54, wherein said coat or chemically modified surface is patterned.

56. The system of claim 55, wherein said coat or chemically modified surface is discontinuous.

57. The system of claim 56, wherein said coat or chemically modified surface is restricted to areas on said non-conductive substrate surrounding said pores.

58. The system of claim 49, wherein said substrate is designed and constructed locatable on an organ.

59. The system of claim 58, wherein said substrate is designed and constructed locatable on a brain.

60. The system of claim 58, wherein said substrate is designed and constructed implantable in an animal.

61. The system of claim 58, wherein said non-conductive substrate is flexible.

62. The system of claim 49, wherein said pores and said channels are designed and constructed such that an under-pressure formed in said channels results

in vacuum adherence of the plurality of cells onto said plurality of addressable pores, such that a single cell of the plurality of cells is adhered onto a single pore of said plurality of addressable pores.

63. The system of claim 62, further comprising a pump being in fluid communication with said plurality of channels, said pump and each of said plurality of channels being designed and constructed so as to provide an equally distributed pressure drop over said plurality of addressable pores.

64. The system of claim 62, wherein said non-conductive substrate is coated with a coat or having a chemically modified surface, so as to enhance affinity adherence of cells thereto and growth of cells thereon.

65. The system of claim 64, wherein said coat or chemically modified surface is patterned.

66. The system of claim 65, wherein said coat or chemically modified surface is discontinuous.

67. The system of claim 66, wherein said coat or chemically modified surface is restricted to areas on said non-conductive substrate surrounding said pores.

68. The system of claim 49, wherein said electrode structures are emerging from bases of said pores and protrude from a surface of said non-conductive substrate.

69. The system of claim 49, wherein said electrode structures are emerging from bases of said pores and are flush with a surface of said non-conductive substrate.

70. The system of claim 49, wherein each of said electrode structures is designed and constructed to penetrate into a cell adhered thereto.

71. The system of claim 49, wherein each of said electrode structures is designed and constructed to externally engage a cell adhered thereto.

72. The system of claim 49, wherein each of said electrode structures is substantially perpendicular to said non-conductive substrate.

73. The system of claim 49, designed and constructed such that when a cell adheres to an electrode structure of said plurality of electrode structures, leakage of intracellular components of the cell is prevented.

74. The system of claim 49, wherein each of said electrode structures is a nanotube characterized by an inner diameter of 5 nm to 20 nm, an outer diameter of 50 nm to 200 nm and a height of 100 nm to 5000 nm.

75. The system of claim 49, wherein an average separation between two electrode structures of said plurality of electrode structures is from 50 nm to 300 nm.

76. The system of claim 49, wherein each of said electrode structures is characterized by an outer diameter of 10 micrometers to 30 micrometers.

77. The system of claim 49, wherein an average separation between two electrode structures of said plurality of electrode structures is from 50 micrometers to 300 micrometers.

78. The system of claim 49, wherein said electrode structures have hydrophobic properties.

79. The system of claim 49, wherein each of said channels is characterized by an inner diameter of 10 micrometers to 50 micrometers.

80. The system of claim 49, wherein said channels and said pores are designed and constructed so as to allow administration therethrough of at least one substance to said cells.

81. The system of claim 49, wherein said channels and said pores are designed and constructed so as to allow administration therethrough of different substances to different cells of said plurality of cells.

82. The system of claim 49, wherein said plurality of conductive elements and said plurality of channels are devoid of electrical coupling thereamongst.

83. The system of claim 82, wherein said plurality of conductive elements and said plurality of channels are formed at different layers within said non-conductive substrate.

84. The system of claim 49, further comprising a coded interface electrically coupled with said plurality of conductive elements and being connectable to a system of amplifiers.

85. The system of claim 49, further comprising a system of amplifiers being electrically coupled with said plurality of conductive elements.

86. The system of claim 49, wherein said system of amplifiers are integrally formed on or in said non-conductive substrate.

87. The system of claim 84, wherein said coded interface comprises a plurality of transmission lines, each transmission line being electrically coupled to one of said plurality of conductive elements.

88. The system of claim 85, further comprising at least one data processor, electrically coupled to said system of amplifiers viat least one acquisition board, for acquiring and processing data collected from said plurality of electrode structures.

89. The system of claim 88, further comprising at least one multiplexer, being in electrical communication with said at least one data processor, wherein each one of said at least one multiplexer combines at least two communication channels originated from said acquisition board.

90. The system of claim 88, further comprising a stimulator electrically communicating with said at least one data processor, for generating temporal stimulating electrical signals, transmitted via said electrode structures to the cells at predetermined intervals and in predetermined durations.

91. The system of claim 90, wherein said stimulator is designed and configured so as prevent electrolysis process within said electrode structures.

92. The system of claim 49, wherein each of said electrode structures is characterized by voltage sensitivity ranging from 1 microvolt to 1 volt.

93. The system of claim 92, wherein said voltage sensitivity is selected so as to allow sensing intracellular potentials.

94. The system of claim 92, wherein said voltage sensitivity is selected so as to allow sensing extracellular potentials.

95. The system of claim 92, wherein said voltage sensitivity is selected so as to allow transmitting stimuli to the cells.

96. The system of claim 49, wherein each of said plurality of conductive elements is made of Gold.

97. The system of claim 54, wherein said coat or chemically modified surface comprises a substance selected from the group consisting of a protein, a peptide and a carbohydrate.

98. The system of claim 54, wherein said coat or chemically modified surface comprises, Poly-D-Lysine, Poly-D-Arginine, a mixed polymer of D-Lysine and D-arginine and Glc-Nac.

99. The system of claim 64, wherein said coat or chemically modified surface comprises a substance selected from the group consisting of a protein, a peptide and a carbohydrate.

100. The system of claim 64, wherein said coat or chemically modified surface comprises, Poly-D-Lysine, Poly-D-Arginine, a mixed polymer of D-Lysine and D-arginine and Glc-Nac.

101. A method of positioning at least one cell in at least one addressable position, the method comprising:

providing a substrate formed with at least one addressable pore and at least one channel embedded is said substrate and being in fluid communication with said at least one pore;

spreading a liquid medium and said at least one cell over said substrate; and generating an under-pressure in said at least one channel so as to adhere the at least one cell onto said at least one pore via vacuum adherence, such that a single cell vacuum adhered onto a single pore, thereby positioning the at least one cell in the at least one addressable position.

102. The method of claim 101, wherein said substrate is formed with a plurality of addressable pores and a plurality of channels and being suitable for positioning a plurality of cells in a plurality of addressable positions.

103. The method of claim 101, wherein the at least one cell is electrically excitable.

104. The method of claim 101, wherein the at least one cell is selected from the group consisting of a neuron cell, a heart cell, a muscle cell and a pancreatic cell.

105. The method of claim 101, further comprising providing a coat or a chemically modified surface to said substrate, selected to enhance affinity adherence of the at least one cell thereto and growth of cells thereon.

106. The method of claim 105, wherein said coat or chemically modified surface is patterned.

107. The method of claim 106, wherein said coat or chemically modified surface is discontinuous.

108. The method of claim 107, wherein said coat or chemically modified surface is restricted to areas on said substrate surrounding said at least one pore.

109. The method of claim 101, further comprising sensing electrical signals of the at least one cell via at least one electrode structure.

110. The method of claim 102, further comprising sensing electrical signals of the plurality of cells via a plurality of electrode structures.

111. The method of claim 109, further comprising providing a coat or a chemically modified surface to said substrate, selected to enhance affinity adherence of the at least one cell thereto and growth of cells thereon.

112. The method of claim 111, wherein said coat or chemically modified surface is patterned.

113. The method of claim 112, wherein said coat or chemically modified surface is discontinuous.

114. The method of claim 113, wherein said coat or chemically modified surface is restricted to areas on said substrate surrounding said at least one pore.

115. The method of claim 109, wherein said at least one electrode structure is emerging from a base of said at least one pore and protrude from a surface of said substrate.

116. The method of claim 109, wherein said at least one electrode structure is emerging from a base of said at least one pore and are flush with a surface of said substrate.

117. The method of claim 110, wherein said sensing is by penetrating the cells, using said electrode structures.

118. The method of claim 110, wherein said sensing is by externally engaging the cells using said electrode structures.

119. The method of claim 110, wherein each of said electrode structures is substantially perpendicular to said substrate.

120. The method of claim 109, further comprising preventing leakage of intracellular components of a cell when said cell adhere to said electrode structure.

121. The method of claim 109, wherein said electrode structure is a nanotube characterized by an inner diameter of 5 nm to 20 nm, an outer diameter of 50 nm to 200 nm and a height of 100 nm to 5000 nm.

122. The method of claim 110, wherein an average separation between two electrode structures of said plurality of electrode structures is from 50 nm to 300 nm.

123. The method of claim 109, wherein said electrode structure is characterized by an outer diameter of 10 micrometers to 30 micrometers.

124. The method of claim 110, wherein an average separation between two electrode structures of said plurality of electrode structures is from 50 micrometers to 300 micrometers.

125. The method of claim 109, wherein said at least one electrode structure has hydrophobic properties.

126. The method of claim 101, wherein each of said at least one channel is characterized by an inner diameter of 10 micrometers to 50 micrometers.

127. The method of claim 101, further comprising administrating at least one substance to said at least one cell via said at least one channel and said at least one addressable pore.

128. The method of claim 102, further comprising administrating different substances to different cells of said plurality of cells via plurality of channels and said plurality of addressable pores.

129. The method of claim 109, further comprising amplifying said electrical signals by at least one amplifier.

130. The method of claim 110, further comprising amplifying said electrical signals by a system of amplifiers.

131. The method of claim 129, wherein said at least one amplifier is integrally formed on or in said substrate.

132. The method of claim 130, wherein said system of amplifiers is integrally formed on or in said substrate.

133. The method of claim 110, wherein each of said electrode structures is characterized by voltage sensitivity ranging from 1 microvolt to 1 volt.

134. The method of claim 133, wherein said voltage sensitivity is selected so as to allow sensing intracellular potentials.

135. The method of claim 133, wherein said voltage sensitivity is selected so as to allow sensing extracellular potentials.

136. The method of claim 133, wherein said voltage sensitivity is selected so as to allow transmitting stimuli to the at least one cell.

137. The method of claim 101, wherein said generating said under-pressure is done so as to provide an equally distributed pressure drop over said at least one addressable pore.

138. The method of claim 101, further comprising continuously exchanging fluids between a fluid source and said at least one channel and at least one pore.

139. The method of claim 105, wherein said coat or chemically modified surface comprises a substance selected from the group consisting of a protein, a peptide and a carbohydrate.

140. The method of claim 105, wherein said coat or chemically modified surface comprises, Poly-D-Lysine, Poly-D-Arginine, a mixed polymer of D-Lysine and D-arginine and Glc-Nac.

141. The method of claim 111, wherein said coat or chemically modified surface comprises a substance selected from the group consisting of a protein, a peptide and a carbohydrate.

142. The method of claim 111, wherein said coat or chemically modified surface comprises, Poly-D-Lysine, Poly-D-Arginine, a mixed polymer of D-Lysine and D-arginine and Glc-Nac.

143. A method of measuring electrical activity of a plurality of cells, the method comprising:

(a) providing a non-conductive substrate formed with a plurality of addressable pores and a plurality of channels embedded therein and being in fluid communication with said plurality of addressable pores;

(b) spreading a liquid medium and said cells over said substrate;

(c) sensing electrical signals of the cells via a plurality of multi-electrode-arrays, wherein each one of said plurality of multi-electrode-arrays includes a plurality of electrode structures formed on a first side of said non-conductive substrate and positioned in one of said pores; and

(g) continuously exchanging fluids between a fluid source and said channels and pores a fluid source being in fluid communication with said plurality of channels;

thereby measuring the electrical activity of the plurality of cells.

144. The method of claim 143, wherein said sensing electrical signals and said continuously exchanging fluids is executed substantially contemporaneously.

145. The method of claim 143, wherein the plurality of cells are electrically excitable.

146. The method of claim 143, wherein the plurality of cells are selected from the group consisting of a neuron cell, a heart cell, a muscle cell and a pancreatic cell.

147. The method of claim 143, further comprising providing a coat or a chemically modified surface to said substrate, selected to enhance affinity adherence of the cells thereto and growth of cells thereon.

148. The method of claim 147, wherein said coat or chemically modified surface is patterned.

149. The method of claim 148, wherein said coat or chemically modified surface is discontinuous.

150. The method of claim 149, wherein said coat or chemically modified surface is restricted to areas on said non-conductive substrate surrounding said pores.

151. The method of claim 143, further comprising generating an under-pressure in said channels so as to adhere the plurality of cells onto said plurality of addressable pores via vacuum adherence, such that a single cell of the plurality of cells is adhered onto a single pore of said plurality of addressable pores.

152. The method of claim 151, wherein said generating said under-pressure is done so as to provide an equally distributed pressure drop over said plurality of addressable pores.

153. The method of claim 151, further comprising providing a coat or a chemically modified surface to said substrate, selected to enhance affinity adherence of the cells thereto and growth of cells thereon.

154. The method of claim 153, wherein said coat or chemically modified surface is patterned.

155. The method of claim 154, wherein said coat or chemically modified surface is discontinuous.

156. The method of claim 155, wherein said coat or chemically modified surface is restricted to areas on said non-conductive substrate surrounding said pores.

157. The method of claim 143, wherein said electrode structures are emerging from bases of said pores and protrude from a surface of said non-conductive substrate.

158. The method of claim 143, wherein said electrode structures are emerging from bases of said pores and are flush with a surface of said non-conductive substrate.

159. The method of claim 143, wherein said sensing is by penetrating the cells, using said electrode structures.

160. The method of claim 143, wherein said sensing is by externally engaging the cells using said electrode structures.

161. The method of claim 143, wherein each of said electrode structures is substantially perpendicular to said non-conductive substrate.

162. The method of claim 143, further comprising preventing leakage of intracellular components of the cells when the cells adhere to said electrode structures.

163. The method of claim 143, wherein each of said electrode structures is a nanotube characterized by an inner diameter of 5 nm to 20 nm, an outer diameter of 50 nm to 200 nm and a height of 100 nm to 5000 nm.

164. The method of claim 143, wherein an average separation between two electrode structures of said plurality of electrode structures is from 50 nm to 300 nm.

165. The method of claim 143, wherein each of said electrode structures is characterized by an outer diameter of 10 micrometers to 30 micrometers.

166. The method of claim 143, wherein an average separation between two electrode structures of said plurality of electrode structures is from 50 micrometers to 300 micrometers.

167. The method of claim 143, wherein said electrode structures have hydrophobic properties.

168. The method of claim 143, wherein each of said channels is characterized by an inner diameter of 10 micrometers to 50 micrometers.

169. The method of claim 143, further comprising administrating at least one substance to said cells via said channels and said pores.

170. The method of claim 143, further comprising administrating different substances to different cells via said channels and said pores.

171. The method of claim 143, further comprising amplifying said electrical signals by a system of amplifiers electrically coupled to a plurality of conductive elements formed on a second side of said non-conductive substrate, wherein each one of said conductive elements is electrically coupled to one of said electrode structures.

172. The method of claim 143, further comprising acquiring and processing data collected from said plurality of electrode structures using at least one data processor.

173. The method of claim 143, further comprising generating temporal stimulating electrical signals, and transmitting said stimulating electrical signals via said electrode structures to the cells at predetermined intervals and in predetermined durations.

174. The method of claim 173, wherein said stimulating is done so as prevent electrolysis process within said electrode structures.

175. The method of claim 171, wherein each of said plurality of conductive elements is made of Gold.

176. The method of claim 143, wherein each of said electrode structures is characterized by voltage sensitivity ranging from 1 microvolt to 1 volt.

177. The method of claim 176, wherein said voltage sensitivity is selected so as to allow sensing intracellular potentials.

178. The method of claim 176, wherein said voltage sensitivity is selected so as to allow sensing extracellular potentials.

179. The method of claim 176, wherein said voltage sensitivity is selected so as to allow transmitting stimuli to the cells.

180. The method of claim 147, wherein said coat or chemically modified surface comprises a substance selected from the group consisting of a protein, a peptide and a carbohydrate.

181. The method of claim 147, wherein said coat or chemically modified surface comprises, Poly-D-Lysine, Poly-D-Arginine, a mixed polymer of D-Lysine and D-arginine and Glc-Nac.

182. The method of claim 153, wherein said coat or chemically modified surface comprises a substance selected from the group consisting of a protein, a peptide and a carbohydrate.

183. The method of claim 153, wherein said coat or chemically modified surface comprises, Poly-D-Lysine, Poly-D-Arginine, a mixed polymer of D-Lysine and D-arginine and Glc-Nac.

184. A method of manufacturing a device for positioning at least one cell in at least one addressable position, the method comprising providing a substrate and forming therein at least one addressable pore and at least one channel, so that said at least one channel is in fluid communication with said at least one addressable pore, said at least one pore and said at least one channel being designed and constructed such that an under-pressure formed in said channels results in vacuum adherence of the at least one cell onto said at least one addressable pore, such that a single cell is vacuum adhered onto a single pore.

185. The method of claim 184, comprising forming in said substrate a plurality of addressable pores and a plurality of channels being suitable for positioning a plurality of cells in a plurality of addressable positions.

186. The method of claim 184, further comprising coating said substrate with a coat or forming a chemically modified surface thereon, so as to enhance affinity adherence of cells thereto and growth of cells thereon.

187. The method of claim 186, wherein said coat or chemically modified surface is patterned.

188. The method of claim 187, wherein said coat or chemically modified surface is discontinuous.

189. The method of claim 188, wherein said coat or chemically modified surface is restricted to areas on said substrate surrounding said pores.

190. The method of claim 184, wherein said substrate is a non-conductive substrate.

191. The method of claim 184, further comprising forming, in said at least one pore, an electrode structure thereby forming at least one electrode structure.

192. The method of claim 185, further comprising forming, in each one of said pores, an electrode structure thereby forming a plurality of electrode structures.

193. The method of claim 190, wherein said forming said at least one electrode structure and said forming said at least one pore and said at least one channel is executed substantially contemporaneously.

194. The method of claim 190, wherein said forming said at least one electrode structure and said forming said at least one pore and said at least one channel is executed sequentially.

195. The method of claim 190, wherein said forming said at least one electrode structure and said forming said at least one pore and said at least one channel is executed in a combination of sequential and substantially contemporaneous steps.

196. The method of claim 184, wherein said substrate is designed and constructed locatable on an organ.

197. The method of claim 184, wherein said substrate is designed and constructed locatable on a brain.

198. The method of claim 184, wherein said substrate is designed and constructed implantable in an animal.

199. The method of claim 184, wherein said substrate is flexible.

200. The method of claim 191, further comprising coating said substrate with a coat or forming a chemically modified surface thereon, so as to enhance affinity adherence of cells thereto and growth of cells thereon.

201. The method of claim 200, wherein said coat or chemically modified surface is patterned.

202. The method of claim 201, wherein said coat or chemically modified surface is discontinuous.

203. The method of claim 202, wherein said coat or chemically modified surface is restricted to areas on said substrate surrounding said pores.

204. The method of claim 191, wherein said forming said at least one electrode structure is done so that said at least one electrode structure emerges from a base of said at least one pore and protrudes from a surface of said substrate.

205. The method of claim 192, wherein said forming said electrode structures is done so that said electrode structures emerge from bases of said pores and protrude from a surface of said substrate.

206. The method of claim 192, wherein said forming said electrode structures is done so that said electrode structures are flush with a surface of said substrate.

207. The method of claim 192, wherein each of said electrode structures is designed and constructed to penetrate into a cell adhered thereto.

208. The method of claim 192, wherein each of said electrode structures is designed and constructed to externally engage a cell adhered thereto.

209. The method of claim 192, wherein said forming said electrode structures is done so that said electrode structures are substantially perpendicular to said substrate.

210. The method of claim 191, wherein said electrode structure is a nanotube characterized by an inner diameter of 5 nm to 20 nm, an outer diameter of 50 nm to 200 nm and a height of 100 nm to 5000 nm.

211. The method of claim 192, wherein an average separation between two electrode structures of said plurality of electrode structures is from 50 nm to 300 nm.

212. The method of claim 191, wherein said electrode structure is characterized by an outer diameter of 10 micrometers to 30 micrometers.

213. The method of claim 192, wherein an average separation between two electrode structures of said plurality of electrode structures is from 50 micrometers to 300 micrometers.

214. The method of claim 191, wherein said at least one electrode structure has hydrophobic properties.

215. The method of claim 184, wherein said at least one channel is characterized by an inner diameter of 10 micrometers to 50 micrometers.

216. The method of claim 184, wherein said at least one channel and said at least one addressable pore are designed and constructed so as to allow administration therethrough of at least one substance to said at least one cell.

217. The method of claim 185, wherein said plurality of channels and said plurality of addressable pores are designed and constructed so as to allow administration therethrough of different substances to different cells of said plurality of cells.

218. The method of claim 191, further comprising forming at least one conductive element embedded in said substrate and electrically coupling said at least one conductive element to said at least one electrode structure.

219. The method of claim 192, further comprising forming a plurality of conductive elements embedded in said substrate and electrically coupling each of said conductive elements to one of said electrode structures.

220. The method of claim 219, wherein said plurality of conductive elements and said plurality of channels are devoid of electrical coupling thereamongst.

221. The method of claim 220, wherein said plurality of conductive elements and said plurality of channels are formed at different layers within said substrate.

222. The method of claim 219, further comprising electrically coupling a coded interface with said plurality of conductive elements, said coded interface being connectable to a system of amplifiers.

223. The method of claim 219, further comprising forming a system of amplifiers on or in said substrate and electrically coupling said plurality of conductive elements with said system of amplifiers.

224. The method of claim 222, wherein said coded interface comprises a plurality of transmission lines, each transmission line being electrically coupled to one of said plurality of conductive elements.

225. The method of claim 191, wherein said at least one electrode structure is characterized by voltage sensitivity ranging from 1 microvolt to 1 volt.

226. The method of claim 225, wherein said voltage sensitivity is selected so as to allow sensing intracellular potentials.

227. The method of claim 225, wherein said voltage sensitivity is selected so as to allow sensing extracellular potentials.

228. The method of claim 225, wherein said voltage sensitivity is selected so as to allow transmitting stimuli to the cells.

229. The method of claim 219, wherein each of said plurality of conductive elements is made of Gold.

230. The method of claim 185, further comprising positioning a pump being in fluid communication with said plurality of channels, said pump and each of said plurality of channels being designed and constructed so as to provide an equally distributed pressure drop over said plurality of addressable pores.

231. The method of claim 185, further comprising positioning a fluid-interface being coupled to a fluid source, for continuously exchanging fluids between said fluid source and said at least one channel and said at least one pore.

232. The method of claim 186, wherein said coating said substrate with said coat or forming said chemically modified surface thereon comprises: coating said substrate by a photoresist layer, patterning said photoresist layer, immersing said substrate in a solution containing a coating substance and removing said photoresist layer.

233. The method of claim 232, wherein said coating substance is selected from the group consisting of a protein, a peptide and a carbohydrate.

234. The method of claim 186, wherein said coating substance is selected from the group consisting of Poly-D-Lysine, Poly-D-Arginine, a mixed polymer of D-Lysine and D-arginine and Glc-Nac.

235. The method of claim 200, wherein said coating said substrate with said coat or forming said chemically modified surface thereon comprises: coating said substrate by a photoresist layer, patterning said photoresist layer, immersing said substrate in a solution containing a coating substance and removing said photoresist layer.

236. The method of claim 235, wherein said coating substance is selected from the group consisting of Poly-D-Lysine, Poly-D-Arginine, a mixed polymer of D-Lysine and D-arginine and Glc-Nac.

237. The method of claim 235, wherein said coating substance is selected from the group consisting of a protein, a peptide and a carbohydrate.

238. The method of claim 218, wherein said forming said at least one conductive element is by micro-lithography.

239. The method of claim 184, wherein said forming said at least one addressable pore and said at least one channel is by micro-lithography.

240. The method of claim 184, wherein said forming said at least one addressable pore and said at least one channel comprises laminating a first layer of a first polymer on said substrate, structuring said first layer by photolithography so as to shape said at least one channel and said at least one pore and laminating a second layer of a second polymer on said at least one channel.

241. The method of claim 240, wherein said first polymer is Riston®.

242. The method of claim 240, wherein said second polymer is Riston®.

243. The method of claim 240, wherein said first polymer is SU-8.

244. The method of claim 218, wherein said forming said at least one electrode structure is by patterning at least one conductive nucleus onto said at least one conductive element and growing said electrode structure thereon using a method of plasma enhanced hot filament chemical vapor deposition.

245. The method of claim 244, wherein said at least one conductive nucleus is made of nickel.

246. The method of claim 191, wherein said at least one electrode structure is made of carbon.

247. The method of claim 244, further comprising laminating said at least one conductive element by a polymer so as to obtain an insulating layer covering said at least one conductive element and said at least one conductive nucleus.

248. A method of manufacturing a system for measuring electrical activity of a plurality of cells, the system comprising:

(a) providing a non-conductive substrate and forming therein a plurality of addressable pores and a plurality of channels, so that said plurality of channels are in fluid communication with said plurality of addressable pores;

(b) forming a plurality of multi-electrode-arrays on a first side of said non-conductive substrate, each one of said plurality of multi-electrode-arrays includes a plurality of electrode structures, so as to position each one of said electrode structures in one of said pores;

(c) forming a plurality of conductive elements on a second side of said non-conductive substrate, so that each one of said conductive elements is electrically coupled to one of said electrode structures; and

(d) positioning a fluid source so that said fluid source is in fluid communication with said plurality of channels;

said pores, said channels, said electrode structures and said fluid source are designed and constructed so that said electrode structures sense electrical signals from the plurality of cells while said fluid source continuously exchanges fluids with said channels and pores.

249. The method of claim 248, wherein said forming said pores, said channels and said multi-electrode-arrays is done in an arrangement so as to reduce ground loops.

250. The method of claim 248, wherein said forming said pores, said channels and said multi-electrode-arrays is done in an arrangement so as to maximize signal-to-noise ratio.

251. The method of claim 248, wherein said forming said pores and said multi-electrode-arrays is in a matrix form.

252. The method of claim 248, wherein said forming said pores and said multi-electrode-arrays is in a square matrix form.

253. The method of claim 248, wherein said forming said pores and said channels, said forming said multi-electrode-arrays and said forming said conductive elements is executed substantially contemporaneously.

254. The method of claim 248, wherein said forming said pores and said channels, said forming said multi-electrode-arrays and said forming said conductive elements is executed sequentially.

255. The method of claim 248, wherein said forming said pores and said channels, said forming said multi-electrode-arrays and said forming said conductive elements is executed in a combination of sequential and substantially contemporaneous steps.

256. The method of claim 248, wherein said non-conductive substrate is designed and constructed locatable on an organ.

257. The method of claim 248, wherein said non-conductive substrate is designed and constructed locatable on a brain.

258. The method of claim 248, wherein said non-conductive substrate is designed and constructed implantable in an animal.

259. The method of claim 256, wherein said non-conductive substrate is flexible.

260. The method of claim 248, further comprising coating said substrate with a coat or forming a chemically modified surface thereon, so as to enhance affinity adherence of cells thereto and growth of cells thereon.

261. The method of claim 260, wherein said coat or chemically modified surface is patterned.

262. The method of claim 261, wherein said coat or chemically modified surface is discontinuous.

263. The method of claim 262, wherein said coat or chemically modified surface is restricted to areas on said non-conductive substrate surrounding said pores.

264. The method of claim 248, wherein said pores and said channels are designed and constructed such that an under-pressure formed in said channels results in vacuum adherence of the plurality of cells onto said plurality of addressable pores, such that a single cell of the plurality of cells is adhered onto a single pore of said plurality of addressable pores.

265. The method of claim 264, further comprising positioning a pump being in fluid communication with said plurality of channels, said pump and each of said

plurality of channels being designed and constructed so as to provide an equally distributed pressure drop over said plurality of addressable pores.

266. The method of claim 264, further comprising coating said substrate with a coat or forming a chemically modified surface thereon, so as to enhance affinity adherence of cells thereto and growth of cells thereon.

267. The method of claim 266, wherein said coat or chemically modified surface is patterned.

268. The method of claim 267, wherein said coat or chemically modified surface is discontinuous.

269. The method of claim 268, wherein said coat or chemically modified surface is restricted to areas on said non-conductive substrate surrounding said pores.

270. The method of claim 248, wherein said forming said multi-electrode-arrays is done so that said electrode structures emerge from bases of said pores and protrude from a surface of said substrate.

271. The method of claim 248, wherein said forming said multi-electrode-arrays is done so that said electrode structures are flush with a surface of said substrate.

272. The method of claim 248, wherein each of said electrode structures is designed and constructed to penetrate into a cell adhered thereto.

273. The method of claim 248, wherein each of said electrode structures is designed and constructed to externally engage a cell adhered thereto.

274. The method of claim 248, wherein said forming said multi-electrode-arrays is done so that said electrode structures are substantially perpendicular to said substrate.

275. The method of claim 248, wherein each of said electrode structures is a nanotube characterized by an inner diameter of 5 nm to 20 nm, an outer diameter of 50 nm to 200 nm and a height of 100 nm to 5000 nm.

276. The method of claim 248, wherein an average separation between two electrode structures of said plurality of electrode structures is from 50 nm to 300 nm.

277. The method of claim 248, wherein each of said electrode structures is characterized by an outer diameter of 10 micrometers to 30 micrometers.

278. The method of claim 248, wherein an average separation between two electrode structures of said plurality of electrode structures is from 50 micrometers to 300 micrometers.

279. The method of claim 248, wherein said electrode structures have hydrophobic properties.

280. The method of claim 248, wherein each of said channels is characterized by an inner diameter of 10 micrometers to 50 micrometers.

281. The method of claim 248, wherein said channels and said pores are designed and constructed so as to allow administration therethrough of at least one substance to said cells.

282. The method of claim 248, wherein said channels and said pores are designed and constructed so as to allow administration therethrough of different substances to different cells of said plurality of cells.

283. The method of claim 248, wherein said plurality of conductive elements and said plurality of channels are devoid of electrical coupling thereamongst.

284. The method of claim 283, wherein said plurality of conductive elements and said plurality of channels are formed at different layers within said non-conductive substrate.

285. The method of claim 248, further comprising electrically coupling a coded interface with said plurality of conductive elements, said coded interface being connectable to a system of amplifiers.

286. The method of claim 248, further comprising positioning a system of amplifiers and electrically coupling said plurality of conductive elements with said system of amplifiers.

287. The method of claim 248, further comprising forming or a system of amplifiers on or in said substrate and electrically coupling said plurality of conductive elements with said system of amplifiers.

288. The method of claim 285, wherein said coded interface comprises a plurality of transmission lines, each transmission line being electrically coupled to one of said plurality of conductive elements.

289. The method of claim 286, further comprising providing at least one data processor, and electrically coupling said at least one data processor to said system of amplifiers viat least one acquisition board.

290. The method of claim 289, further comprising providing at least one multiplexer, being in electrical communication with said at least one data processor, wherein each one of said at least one multiplexer combines at least two communication channels originated from said acquisition board.

291. The method of claim 289, further comprising providing a stimulator electrically communicating with said at least one data processor, for generating temporal stimulating electrical signals, transmitted via said electrode structures to the cells at predetermined intervals and in predetermined durations.

292. The method of claim 291, wherein said stimulator is designed and configured so as prevent electrolysis process within said electrode structures.

293. The method of claim 248, wherein each of said electrode structures is characterized by voltage sensitivity ranging from 1 microvolt to 1 volt.

294. The method of claim 293, wherein said voltage sensitivity is selected so as to allow sensing intracellular potentials.

295. The method of claim 293, wherein said voltage sensitivity is selected so as to allow sensing extracellular potentials.

296. The method of claim 293, wherein said voltage sensitivity is selected so as to allow transmitting stimuli to the cells.

297. The method of claim 248, wherein each of said plurality of conductive elements is made of Gold.

298. The method of claim 260, wherein said coating said substrate with said coat or forming said chemically modified surface thereon comprises: coating said substrate by a photoresist layer, patterning said photoresist layer, immersing said substrate in a solution containing a coating substance and removing said photoresist layer.

299. The method of claim 298, wherein said coating substance is selected from the group consisting of a protein, a peptide and a carbohydrate.

300. The method of claim 298, wherein said coating substance is selected from the group consisting of Poly-D-Lysine, Poly-D-Arginine, a mixed polymer of D-Lysine and D-arginine and Glc-Nac.

301. The method of claim 266, wherein said coating said substrate with said coat or forming said chemically modified surface thereon comprises: coating said substrate by a photoresist layer, patterning said photoresist layer, immersing said substrate in a solution containing a coating substance and removing said photoresist layer.

302. The method of claim 301, wherein said coating substance is selected from the group consisting of a protein, a peptide and a carbohydrate.

303. The method of claim 301, wherein said coating substance is selected from the group consisting of Poly-D-Lysine, Poly-D-Arginine, a mixed polymer of D-Lysine and D-arginine and Glc-Nac.

304. The method of claim 248, wherein said forming said plurality of conductive elements is by micro-lithography.

305. The method of claim 248, wherein said forming said plurality of addressable pores and said plurality of channels is by micro-lithography.

306. The method of claim 248, wherein said forming said plurality of addressable pores and said plurality of channels comprises laminating a first layer of a first polymer on said substrate, structuring said first layer by photolithography so as to shape said channels and said pores and laminating a second layer of a second polymer on said channels.

307. The method of claim 306, wherein said first polymer is Riston®.

308. The method of claim 306, wherein said second polymer is Riston®.

309. The method of claim 306, wherein said first polymer is SU-8.

310. The method of claim 248, wherein said forming said plurality of multi-electrode-array is by photolithography and lift-off technique.

311. The method of claim 248, wherein said forming said plurality of multi-electrode-array comprises:

(i) applying a first metal layer on said non-conductive substrate;

(ii) patterning said metal layer by photolithography, thereby providing a first patterned metal layer;

(iii) applying an insulating layer on said first patterned metal layer;

(iv) patterning said insulating layer by photolithography, thereby providing a patterned insulating layer; and

(v) applying a second metal layer on said patterned insulating layer using lift-off technique.

312. The method of claim 311, wherein said first metal layer is made of Titanium and Gold.

313. The method of claim 311, wherein said second metal layer is made of Titanium Nitride.

314. The method of claim 311, wherein said insulating layer is made of Silicon Nitride.

315. A method of manufacturing an electrode structure, the method comprising:

(a) providing a substrate being of a first type semiconductor material and having a first side and a second side;

(b) doping a region on said first side of said substrate by a second type semiconductor material, thereby creating an isolated region of said second type semiconductor;

(c) applying an electrically conducting layer on said first side of said substrate, such that said electrically conducting layer is in electrical communication with said region of said second type semiconductor; and

(c) growing the electrode structure on said region of said second type semiconductor.

316. The method of claim 315, wherein said first type semiconductor material is an n-type semiconductor material and said second type semiconductor material is a p-type semiconductor material.

317. The method of claim 315, wherein said first type semiconductor material is a p-type semiconductor material and said second type semiconductor material is an n-type semiconductor material.

318. The method of claim 315, further comprising, prior to said step of applying said electrically conducting layer:

passivating said substrate thereby providing a passive layer; and

selectively etching said passive layer so as to isolate said region of said second type semiconductor from said passive layer.

319. The method of claim 318, wherein said passivating is effected by a procedure selected from the group consisting of oxidation, chemical vapor deposition, physical vapor deposition and spattering.

320. The method of claim 316, further comprising passivating said electrically conducting layer.

321. The method of claim 320, wherein said passivating is effected by a procedure selected from the group consisting of chemical vapor deposition, physical vapor deposition and spattering.

322. The method of claim 315, further comprising prior to said step of applying said electrically conducting layer:

passivating said first side and said second side of said substrate thereby providing, respectively, a first passive layer and a second passive layer; and

selectively etching said first passive layer so as to isolate said region of said second type semiconductor from said first passive layer.

323. The method of claim 322, wherein said passivating is effected by a procedure selected from the group consisting of oxidation, chemical vapor deposition, physical vapor deposition and spattering.

324. The method of claim 322, further comprising, subsequently to said step of applying said electrically conducting layer:

selectively etching said first type semiconductor material; and

etching said second passive layer;

thereby providing protective walls, surrounding said isolated region of said second type semiconductor.

325. The method of claim 315, wherein said growing the electrode structure is effected by a procedure selected from the group consisting of chemical vapor deposition and physical vapor deposition.

326. A method of manufacturing a device for positioning cells in addressable positions, the method comprising providing a substrate having a first side and a second side, and forming therein at least one addressable pore, said at least one addressable pore is at least partially open from said first side and said second side, such that a flow of cells directed from said first side to said second side, results in at least a partial adherence of the cells onto said at least one addressable pore, wherein each a single cell occupies a single pore.

327. The method of claim 326, further comprising coating said substrate with a coat or forming a chemically modified surface thereon, so as to enhance affinity adherence of cells thereto and growth of cells thereon.

328. The method of claim 327, wherein said coat or chemically modified surface is patterned.

329. The method of claim 328, wherein said coat or chemically modified surface is discontinuous.

330. The method of claim 329, wherein said coat or chemically modified surface is restricted to areas on said substrate surrounding said pores.

331. The method of claim 326, wherein said substrate is a non-conductive substrate.

332. The method of claim 326, further comprising forming, in said at least one pore, an electrode structure thereby forming at least one electrode structure.

333. The method of claim 332, wherein said forming said at least one electrode structure and said forming said at least one pore is executed substantially contemporaneously.

334. The method of claim 332, wherein said forming said at least one electrode structure and said forming said at least one pore is executed sequentially.

335. The method of claim 332, wherein said forming said at least one electrode structure and said forming said at least one pore is executed in a combination of sequential and substantially contemporaneous steps.

336. The method of claim 332, wherein said forming said at least one electrode structure is done so that said at least one electrode structure protrudes from a surface of said substrate.

337. The method of claim 332, wherein said forming said electrode structures is done so that said at least one electrode structure flushes with a surface of said substrate.

338. The method of claim 332, wherein each of said electrode structures is designed and constructed to penetrate into a cell adhered thereto.

339. The method of claim 332, wherein each of said electrode structures is designed and constructed to externally engage a cell adhered thereto.

340. The method of claim 332, wherein said forming said electrode structures is done so that said electrode structures are substantially perpendicular to said substrate.

341. The method of claim 332, wherein said electrode structure is a nanotube characterized by an inner diameter of 5 nm to 20 nm, an outer diameter of 50 nm to 200 nm and a height of 100 nm to 5000 nm.

342. The method of claim 332, wherein an average separation between two electrode structures of said plurality of electrode structures is from 50 nm to 300 nm.

343. The method of claim 332, wherein said electrode structure is characterized by an outer diameter of 10 micrometers to 30 micrometers.

344. The method of claim 332, wherein an average separation between two electrode structures of said plurality of electrode structures is from 50 micrometers to 300 micrometers.

345. The method of claim 332, wherein said at least one electrode structure has hydrophobic properties.

346. The method of claim 332, further comprising forming a plurality of conductive elements embedded in said substrate and electrically coupling said plurality of conductive elements to said at least one electrode structure.

347. The method of claim 346, further comprising electrically coupling a coded interface with said plurality of conductive elements, said coded interface being connectable to a system of amplifiers.

348. The method of claim 346, further comprising forming a system of amplifiers on or in said substrate and electrically coupling said plurality of conductive elements with said system of amplifiers.

349. The method of claim 347, wherein said coded interface comprises a plurality of transmission lines, each transmission line being electrically coupled to one of said plurality of conductive elements.

350. The method of claim 332, wherein said at least one electrode structure is characterized by voltage sensitivity ranging from 1 microvolt to 1 volt.

351. The method of claim 350, wherein said voltage sensitivity is selected so as to allow sensing intracellular potentials.

352. The method of claim 350, wherein said voltage sensitivity is selected so as to allow sensing extracellular potentials.

353. The method of claim 350, wherein said voltage sensitivity is selected so as to allow transmitting stimuli to the cells.

354. The method of claim 327, wherein said coating said substrate with said coat or forming said chemically modified surface thereon comprises: coating said substrate by a photoresist layer, patterning said photoresist layer, immersing said substrate in a solution containing a coating substance and removing said photoresist layer.

355. The method of claim 354, wherein said coating substance is selected from the group consisting of a protein, a peptide and a carbohydrate.

356. The method of claim 327, wherein said coating substance is selected from the group consisting of Poly-D-Lysine, Poly-D-Arginine, a mixed polymer of D-Lysine and D-arginine and Glc-Nac.

357. The method of claim 346, wherein said forming said at least one conductive element is by micro-lithography.

358. The method of claim 326, wherein said forming said at least one addressable pore is by micro-lithography.

359. The method of claim 346, wherein said forming said at least one electrode structure is by patterning at least one conductive nucleus onto said at least one conductive element and growing said electrode structure thereon using a method of plasma enhanced hot filament chemical vapor deposition.

360. The method of claim 332, wherein said substrate is made of a first type semiconductor material.

361. The method of claim 360, wherein said forming said at least one addressable pore comprises:

doping a region on said first side of said substrate by a second type semiconductor material, thereby creating an isolated region of said second type semiconductor;

applying an electrically conducting layer on said first side of said substrate, such that said electrically conducting layer is in electrical communication with said region of said second type semiconductor; and

selectively etching said first type semiconductor material;

thereby providing protective walls, surrounding said isolated region of said second type semiconductor.

362. The method of claim 361, further comprising, prior to said step of applying said electrically conducting layer, passivating said first side and said second side of said substrate thereby providing, respectively, a first passive layer and a second passive layer.

363. The method of claim 362, further comprising, subsequently to said step of applying said electrically conducting layer:

selectively etching said first passive layer so as to isolate said region of said second type semiconductor from said first passive layer.

364. The method of claim 362, further comprising, subsequently to said step of selectively etching said first type semiconductor material, etching said second passive layer.

365. The method of claim 361, wherein said at least one electrode structure is grown on said region of said second type semiconductor.

366. The method of claim 361, wherein said first type semiconductor material is an n-type semiconductor material and said second type semiconductor material is a p-type semiconductor material.

367. The method of claim 361, wherein said first type semiconductor material is a p-type semiconductor material and said second type semiconductor material is an n-type semiconductor material.

368. The method of claim 362, wherein said passivating is effected by a procedure selected from the group consisting of oxidation, chemical vapor deposition, physical vapor deposition and spattering.